

reticuloendothelial cells. The affected Kupffer cells became swollen and enlarged, thereby suggesting the possibility that interference with normal interchange of metabolites between the blood in the sinusoids and parenchymal cells might have resulted.

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## CASE REPORT

### Primary Carcinoma of the Ureter

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**P**RIIMARY carcinoma of the ureter is a relatively infrequent neoplasm and constitutes approximately 1% of all tumours of the urinary tract.<sup>2</sup> Secondary involvement of the ureter may occur by direct implantation or dissemination of tumours arising from the kidney, bladder and other neighbouring organs and structures, or by hematogenous or lymphatic spread from distant sites. Histologically, the primary tumours may be of epithelial or mesodermal origin. In each of these, both malignant and benign tumours occur. Factors which have been considered significant in the etiology of primary carcinoma of the ureter are: chronic irritation due to infection or the presence of a stone; malignant metamorphosis in the area of leukoplakia; carcinoma *in situ*; and stimulation by an unrecognized carcinogenic agent.

From 1878, when the first authenticated case was reported by Wising and Blix, up to the present time, some 500 cases of primary carcinoma of the ureter have been published in the world literature.<sup>4</sup> Only a small percentage of these patients survived for four years after operation.

**Pathology.**—To be accurate and complete, any classification of ureteral tumours must include the gross characteristics of these lesions, i.e. papillary or non-papillary; the presence or absence of infiltration; the cellular type and grading or degree of anaplasia.<sup>5</sup> In its pathological characteristics, primary carcinoma of the ureter resembles very closely the malignant epithelial growth of the bladder.<sup>4</sup> Campbell<sup>1</sup> cites W. W. Scott as having found papillary tumours in 50% of 240 cases of primary carcinoma of the ureter;<sup>3</sup> the remainder were of various types.

The papillary tumour is attached to the ureter by a relatively broad pedicle. The non-papillary growth is usually solid and most commonly a squamous-cell carcinoma. All carcinomas of the ureter invade the deeper structures and metastasize

much earlier than tumours of the bladder, owing to the thinness of its wall and the more abundant lymphatic supply of the ureter.

**Clinical features:** These tumours most often occur in the fifth, sixth and seventh decades of life. Most authors do not stress any sex predominance; however, according to Campbell's<sup>1</sup> statistics, males are affected twice as frequently as females. About two-thirds of the tumours are localized in the lower third of the ureter. The most important symptom is painless hematuria, which occurs in some 70% of cases; typically, worm-like blood clots are passed, indicating a ureteral origin. Pain is a complaint in some 60% of cases and is due to ureteral obstruction. Usually it is dull, localized in the region of the kidney and radiating along the ureter; at times typical renal colic occurs. A palpable tumour is present in about 40% of cases, and in the majority of them the mass is felt in the kidney area.

**Diagnosis.**—Examination of the urine will sometimes reveal tumour cells. Plain radiographs of the abdomen, chest and long bones may reveal evidence of metastatic deposits. The intravenous pyelogram, cystoscopy and retrograde pyelogram usually demonstrate the site of the tumour. At times an aortogram will be necessary to clinch the diagnosis.

**Treatment.**—The primary tumour is treated by nephroureterectomy; the excision includes a cuff of the bladder. The prognosis associated with the primary tumour depends largely on early diagnosis and on the cellular characteristics of the growth. Papillary tumours have the better prognosis, which is, however, still grave. A survival of more than four years is rare even with modern advances in surgical technique and with radiotherapy.

A 43-year-old white man was seen by the author in his office on December 23, 1957, because of complete urinary retention from painless hematuria. In view of the urgency of the situation, he was catheterized in the office and 500 c.c. of deeply blood-stained urine

with several blood clots was evacuated. His past history was completely non-contributory. He had never been sick and the episode of hematuria began just one day prior to his attendance at the office. He was admitted to a local hospital immediately.

On examination in hospital, he was 6' 4" tall, weighed 220 lb. and appeared in very good physical condition. There was no abnormality of his head, eyes, ear, nose and throat, and his chest revealed no unusual findings. His pulse rate was 90 per minute and regular; there were no murmurs over his heart and his blood pressure was 130/70 mm. Hg. The abdomen was soft and non-tender; no masses were palpable; the kidneys, liver and spleen could not be felt. Examination of the genito-urinary tract and of the rectum revealed no abnormalities. The extremities showed no edema and no varicosities.

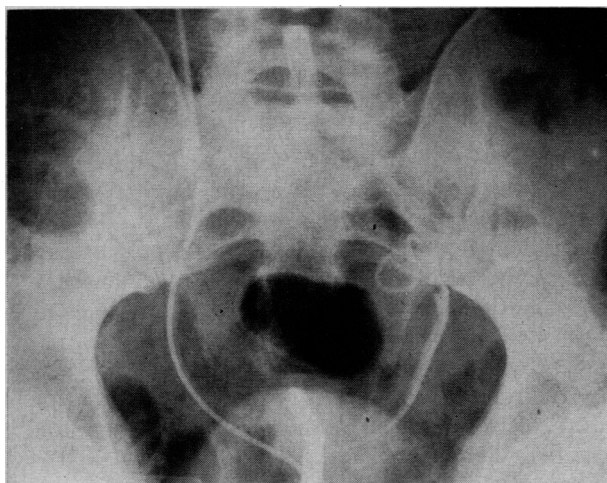


Fig. 1

Laboratory findings included the following: red blood cells, 3,800,000 per c.mm.; white blood cells, 8500 per c.mm.; sedimentation rate, 12 mm./hr.; Wassermann reaction, negative; non-protein nitrogen (NPN), 32 mg. %. Urine: albumin, trace; sugar, negative; red blood cells, four plus; white blood cells, three to four cells per high power field.

Intravenous pyelogram: prompt visualization of the right kidney and ureter; failure to visualize the left kidney and ureter, even after four hours.

Cystoscopy, performed on December 24, revealed a normal urinary bladder and normal ureteral openings on both sides. The ureteral catheter passed easily into the right ureter up to 27 cm. On the left, a block appeared to be present at 12 cm. With manipulation, the catheter was passed further, up to 18 cm. in all, but a flat film revealed that the catheter was coiled in the ureter at the level of the bony pelvic brim (Fig. 1). The dye injected through the left catheter returned to the bladder by backflow. The diagnosis of a tumour of the left ureter became very likely and in order to visualize the left kidney an aortogram was performed; this, too, failed.

Operation was performed on January 3, 1958, under general anesthesia; an enlarged and flabby kidney was revealed which could be easily dislodged from its bed. Nephrectomy was carried out without severing the ureter. The original incision was enlarged downwards and the ureter dissected to the brim of the bony pelvis,

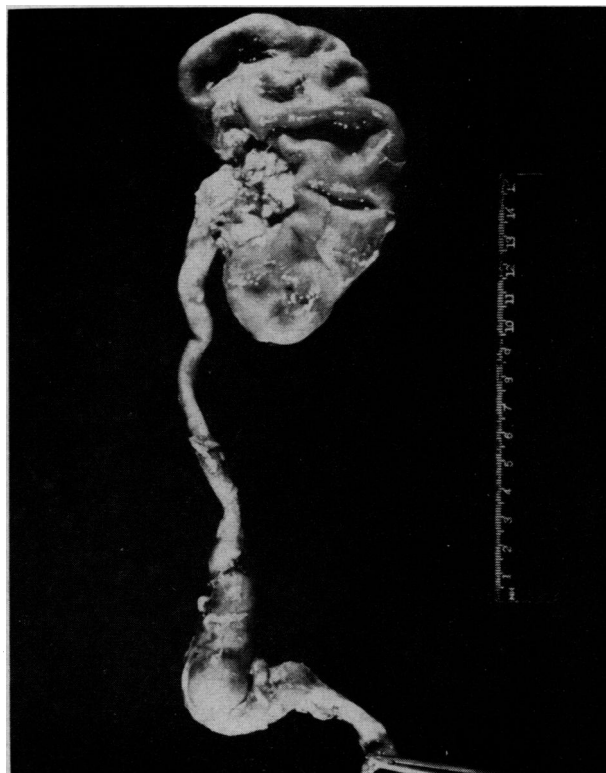


Fig. 2

where it appeared enlarged and of solid consistency. The ureter was doubly clamped at the bladder and severed with the kidney attached. The ureteral stump was fulgurated and allowed to drop back into the abdominal cavity. The postoperative course was unevent-

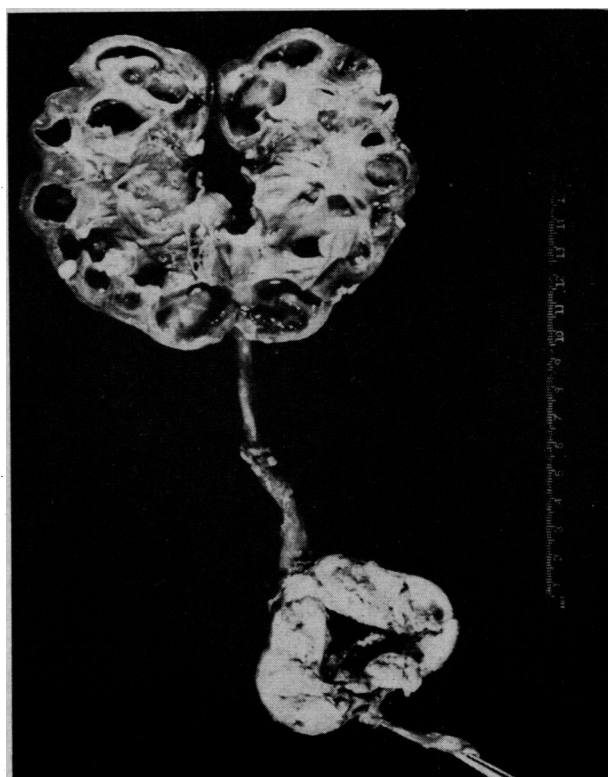


Fig. 3

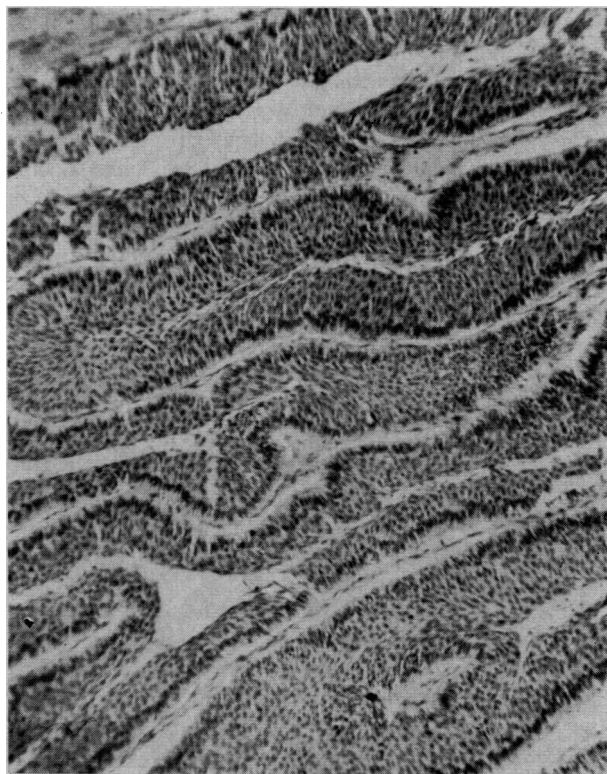


Fig. 4

ful and the patient was discharged 14 days after operation with primary healing of the incision.

Follow-up continues. The latest examination, in April 1963, disclosed that the patient was completely asymptomatic and apparently free of disease.

**Pathology.**—The specimen consisted of a left kidney and attached ureter, the kidney measuring 12 x 6.5 x 4 cm. The ureter had a total length of 27 cm. (Fig. 2).

Marked hydronephrosis was present. The proximal 13 cm. of the ureter appeared normal on gross examination. Distal to that point a fusiform enlargement measuring 7 cm. in length and 3 cm. at its widest part was seen. This swelling ended abruptly at a point 3.5 cm. above the distal end (Fig. 3). On microscopic examination, sections of the submitted kidney showed typical changes due to hydronephrosis. The renal cortex appeared to be compressed and there were numerous fibrosed hyalinized glomeruli. Interstitial tissue of the kidney was heavily infiltrated by chronic inflammatory cells. Sections of the ureter showed that it was almost completely invaded by a well-differentiated carcinoma of the transitional cell type. This tumour did not appear to have penetrated the wall in the sections studied (Fig. 4).

In the opinion of the pathologist, the diagnoses were: transitional cell carcinoma of the ureter, chronic pyelonephritis, and hydronephrosis.

#### SUMMARY

A brief survey of the clinical and pathological features of primary carcinoma of the ureter is presented. A new case of these relatively infrequent neoplasms is reported. The fact that this patient is still alive and apparently well, five years after nephroureterectomy, is of added interest.

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#### PAGES OUT OF THE PAST: FROM THE JOURNAL OF FIFTY YEARS AGO

After a somewhat lengthy debate, the bill to incorporate the Canadian Medical Protective Association was passed on February 24th, with certain amendments. A good deal of misunderstanding prevailed as to the meaning of certain clauses. In section 2 of the bill, as originally drafted, the objects of the Association are stated to be: (a) to support, maintain, and protect the honour, character, and interest of its members; (b) to encourage honourable practice and assist in the suppression and prosecution of unauthorized practice; (c) to give advice and assistance to and defend and assist in the defence of members of the Association in cases where proceedings of any kind are unjustly brought or threatened against them; (d) to promote and support legislative measures likely to benefit the medical profession. Some difference of opinion was expressed as to the meaning of the words "unauthorized practice"; it was feared by some members that the clause in question was a direct affront on other schools of medicine,—for instance osteopathy, homeopathy, or even Christian Science. After much discussion the clause was amended to read: "To encourage honourable practice of the medical profession." Clause (c)

did not meet with unanimous approval, and an amendment was suggested to the effect that advice and assistance should be given only after exoneration by the courts. The motion was lost. Clause (d) was amended to read: "To promote legislative measures likely to improve the practice of medicine." A further bone of contention was found in section (4) which read: "Until altered or repealed by the Association in general meeting, the existing constitution, by-laws and rules of the said incorporated society, as adopted in August, one thousand nine hundred and one, and amended from time to time subsequent thereto, in so far as they are not contrary to law or to the provisions of this Act, shall be the constitution by-laws and rules of the Association." The following clause was substituted: "The Association in general meeting may from time to time pass rules and by-laws of the said Association, in so far as they are not contrary to law, or to the provisions of this Act, in like manner, alter or amend the same." As the amended clause was practically the same as section 6 of the bill as originally drafted, this section was omitted.—*Canad. Med. Ass. J.*, 3: 309, 1913.